US89
STATE ENVIRONMENTAL STUDY

CHAPTER TWO: ALTERNATIVES

This chapter describes the alternatives considered in this Environmental Study (ES), and furthermore, identifies the factors considered when developing the Preferred Alternative. This section includes an analysis of future transportation conditions with and without the proposed project.

2.1 ALTERNATIVE DEVELOPMENT

The development of alternatives for this project began with an examination of the needs to be addressed in order to maintain State Street as a functioning roadway. Any potential alternatives that would not satisfy the needs identified in Chapter 1 were eliminated from consideration on the grounds that they would not meet the project's purpose and need. In addition, any potential alternatives which had substantially higher impacts to the natural and/or human environment were eliminated based on the grounds that they would not be the least impacting, practicable alternative.

The alternatives considered in this ES are discussed below and include the No-Action Alternative, Transportation System Management/Transportation Demand Management Alternative, Transit Alternative, 132-ft Roadway Alternative, and 117-ft Roadway Alternative.

2.1.1 NO-ACTION ALTERNATIVE

The No-Action Alternative assumes that only short-term restoration activities which would maintain the continued operation of the existing road facility would be implemented. Such activities along the State Street corridor would include pavement rehabilitation and striping activities.

The No-Action Alternative would not meet the purpose and need of the project because it would not adequately accommodate the existing and future traffic demand on the State Street corridor. Furthermore, the No-Action Alternative would not improve the safety conditions and would not be consistent with the planning efforts for the State Street corridor. Although the No-Action Alternative would not meet the purpose and need for the project, it is being carried forward as an alternative because it represents the baseline conditions of the State Street corridor.

2.1.2 TSM/TDM ALTERNATIVE

Transportation System Management (TSM) and Transportation Demand Management (TDM) strategies are used to more efficiently utilize existing transportation facilities. TSM strategies manage traffic through access (ramp metering, signal timing, and bus signal priorities), designated travel lanes (high-occupancy vehicle lanes, reversible and breakdown lanes, and transitways), and information management (freeway diversion and advisory signing). TDM strategies seek to decrease the demand by encouraging multi-modal transportation (carpooling, bicycling, or use of the transit system), and by promoting alternatives to peak hour travel (flexible work hours and telecommuting).

The TSM/TDM Alternative would not meet the purpose and need of the project, because as a stand-alone alternative it would not adequately accommodate the existing and future traffic demand, nor

would it be consistent with state, regional, or local transportation plans for the State Street corridor. Therefore, the TSM/TDM Alternative is not carried forward for further analysis in this ES.

2.1.3 TRANSIT ALTERNATIVE

The Transit Alternative would consist of reasonable and feasible mass transit options (bus systems, rail, etc.) even though they may not be within the existing funding authority. The Transit Alternative would include improvements such as additional bus service and rail lines on the State Street corridor and adjacent areas.

The Transit Alternative would not meet the purpose and need of the project, because as a stand-alone alternative it would not adequately accommodate the existing and future traffic demand on the State Street corridor. Although additional transit services, such as the construction of commuter rail, light rail, and additional bus service, would result in an increase in transit ridership, any reduction in vehicles on the State Street corridor would likely be replaced by other vehicles wanting to use the roadway. Therefore, the Transit Alternative is not carried forward for further analysis in this ES.

2.1.4 132-FT ROADWAY ALTERNATIVE

The 132-ft Roadway Alternative would consist of constructing additional travel lanes, a two-way permissive median, shoulders, parkstrips, sidewalks, curb and gutter, and intersection improvements between 2000 North in Orem and 100 East in American Fork in order to provide a 132-ft wide, seven-lane facility on the State Street corridor. Specifically, the 132-ft Roadway Alternative would include three 12-ft travel lanes in each direction, a 14-ft two-way permissive median, 10-ft shoulders, 4.5-ft parkstrips, 5-ft sidewalks, and 2.5-ft curb and gutter (see Figure 2-1).

Analysis of the 132-ft Roadway Alternative revealed that it would meet the project purpose and need by satisfying current and future traffic demand, improving safety, and incorporating state, regional, and local transportation plans. The 132-ft Roadway Alternative would, however, have impacts on the human environment (i.e., impacts to residences, businesses, Alpine Tabernacle in American Fork, existing parkstrips and sidewalks). In order to avoid and minimize these impacts, the 132-ft roadway cross-section was modified and the 117-ft roadway cross-section (discussed below) was developed. Because the 132-ft Roadway Alternative would not be the least impacting, practicable alternative it is not carried forward for further analysis in this ES.

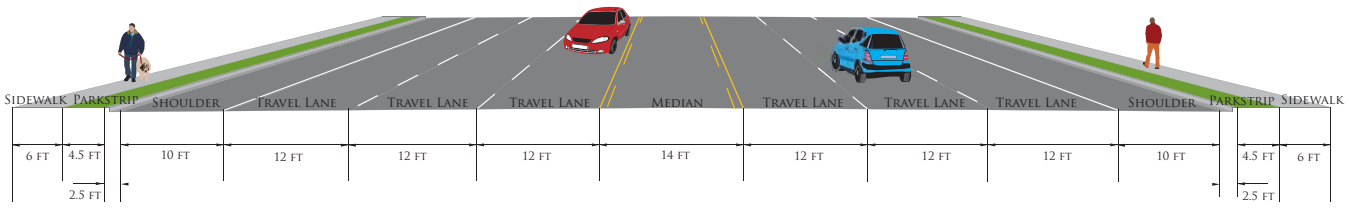


Figure 2-1. 132-ft Cross Section

2.1.5 117-FT ROADWAY ALTERNATIVE

The 117-ft Roadway Alternative (henceforth known as the Preferred Alternative) for the State Street corridor was selected based on its advantage over other alternatives in terms of satisfying current and future traffic demand, improving safety, incorporating state, regional, and local transportation plans, and minimizing impacts to the natural and human environment. Specifically, the Preferred Alternative was selected based on its ability to accommodate existing and future traffic demand,

and its improvements in vehicular, bicyclist, and pedestrian safety along State Street. In addition, the Preferred Alternative was selected on its consistency with state, regional, and local plans ensuring the public that previous planning efforts are being adhered to. Finally, the Preferred Alternative was selected based on its reduced impacts to the natural and human environment. It was chosen because its roadway alignment and intersection improvements avoid impacts to the greatest extent practicable. Where impacts are unavoidable, the selected Preferred Alignment minimizes the impacts and will provide mitigation for such.

The Preferred Alternative would consist of constructing additional thru-lanes, two-way permissive medians, shoulders, sidewalks, curb and gutter, and intersection improvements between 2000 North in Orem and 500 East in American Fork in order to provide a 117-ft wide, seven-lane facility on the State Street corridor (see Preferred Alternative sheets in Appendix A). As discussed above, the 132-ft roadway cross-section was modified to develop the Preferred Alternative's 117-ft roadway cross-section. The changes include: reducing the thru-lanes from 12-ft to 11-ft, reducing the shoulders from 10-ft to 8-ft, eliminating parkstrips, and increasing the sidewalk from 5-ft to 8-ft. Elements of the 117-ft roadway cross-section remaining the same as the 132-ft roadway cross-section include: a 14-ft two-way permissive median and a 2.5-ft curb and gutter (see Figure 2-2).

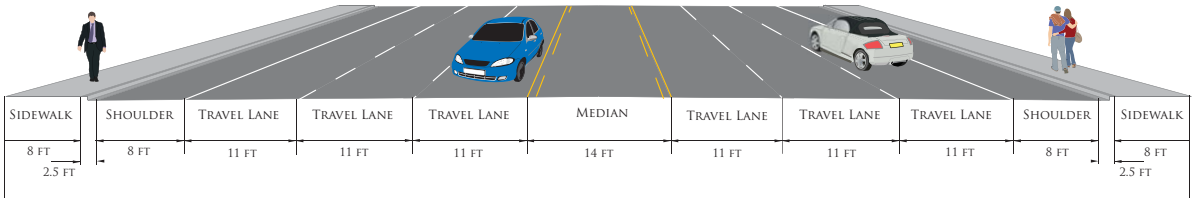


Figure 2-2. 117-ft Cross Section

In order to reduce impacts to the human environment, improve safety, and in accordance with American Fork's request, the construction of a seven-lane roadway associated with the Preferred Alternative would stop at 500 East in American Fork. Between 500 East and 100 East in American Fork, the Preferred Alternative would include intersection improvements (i.e., installing signals, lane reconfiguring and restriping) and construct a raised median on the existing five-lane roadway (see Figure 2-3).

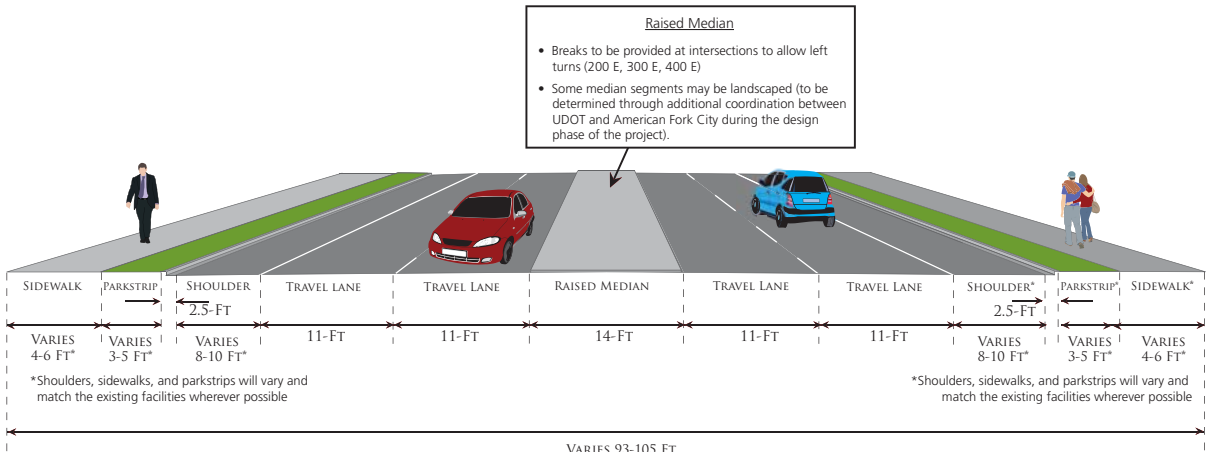


Figure 2-3. 100 East to 500 East American Fork Cross Section

The Preferred Alternative would also increase the capacity and improve the safety of intersections along the State Street corridor. These intersection improvements would vary along the State Street corridor, however, the Preferred Alternative only includes intersection improvements which accommodate a seven-lane roadway (except between 500 East and 100 East in American Fork) and the associated year 2030 traffic.

In addition, the Preferred Alternative was selected based on its ability to improve intersection safety and operations for vehicular, bicyclist, and pedestrian traffic utilizing the State Street corridor. Finally, the Preferred Alternative only includes intersection improvements which were developed to avoid or minimize impacts on the natural and human environment.

The Preferred Alternative would also incorporate TSM strategies which are used to more efficiently utilize transportation facilities (i.e., signal timing, raised median between 500 East and 100 East in American Fork, and combined driveways) and TDM strategies which seek to decrease demand by encouraging multi-modal transportation (i.e., use of the transit-system and bicycling).

The following discussion provides individual details (by city) on the Preferred Alternative's roadway improvements and the signalized and proposed signalized intersection improvements on the State Street corridor. Intersections on the State Street corridor with existing traffic signals would remain signalized. Two intersections that are presently unsignalized are proposed to become signalized as part of the Preferred Alternative. The existing and proposed signalized intersections are identified in Figure 2-4. The Preferred Alternative would not improve roadways that intersect State Street which do not have, and are not proposed to have, traffic signals. For further detail on non-signalized intersection improvements within the State State corridor, please see Preferred Alternative sheets in Appendix A.

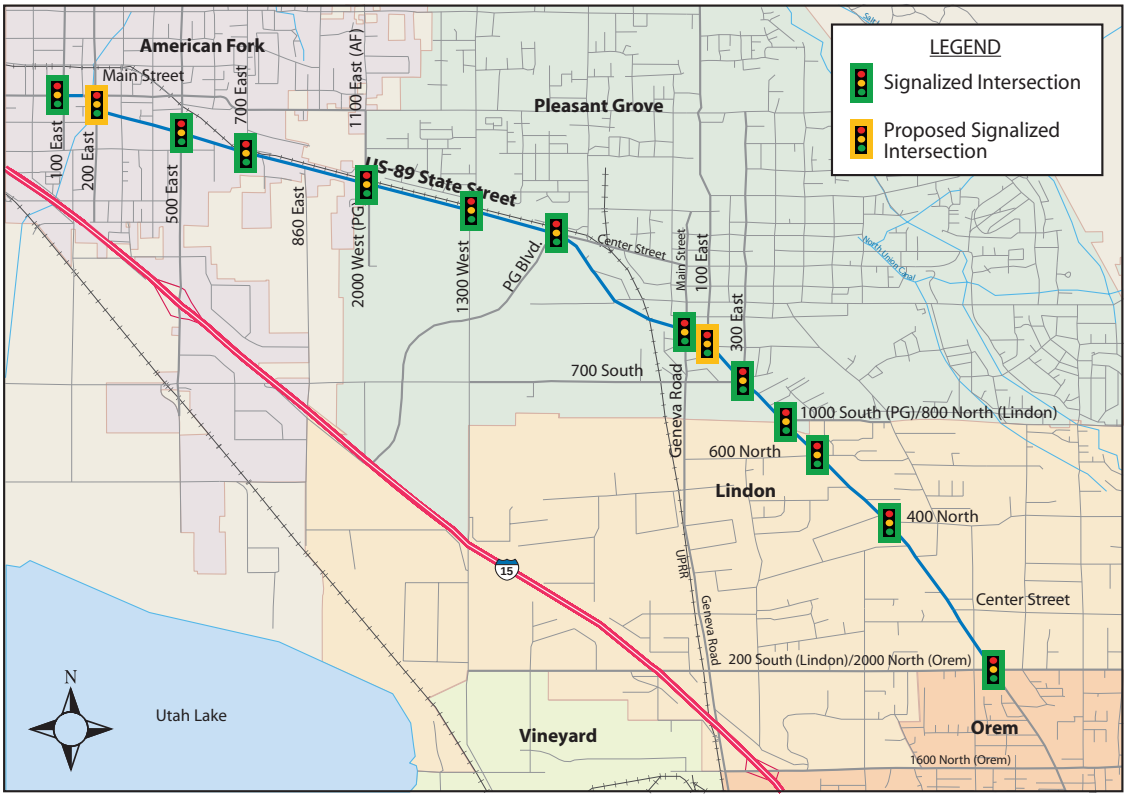


Figure 2-4. Existing and Proposed Signalized Intersections

OREM

The Preferred Alternative would not make improvements to the existing State Street roadway in Orem. The only section of Orem which is located in the project area is the 2000 North (Orem)/200 South (Lindon) intersection with State Street, which is the northern extent of Orem's city limits and the southern extent of the State Street corridor project area.

2000 North (Orem)/200 South (Lindon)

Existing Conditions - 2000 North/200 South Intersection

Preferred Alternative - 2000 North/200 South Intersection

The intersection of 2000 North (Orem)/200 South (Lindon) and State Street is currently a four-legged signalized intersection. 2000 North (Orem)/200 South (Lindon) has one thru-lane, one left-turn lane, and an exclusive right-turn lane for eastbound and westbound traffic at this intersection. State Street at this intersection has three thru-lanes, one left-turn, and an exclusive right-turn lane for northbound traffic; and two thru-lanes, one left-turn lane, and an exclusive right-turn lane for southbound traffic.

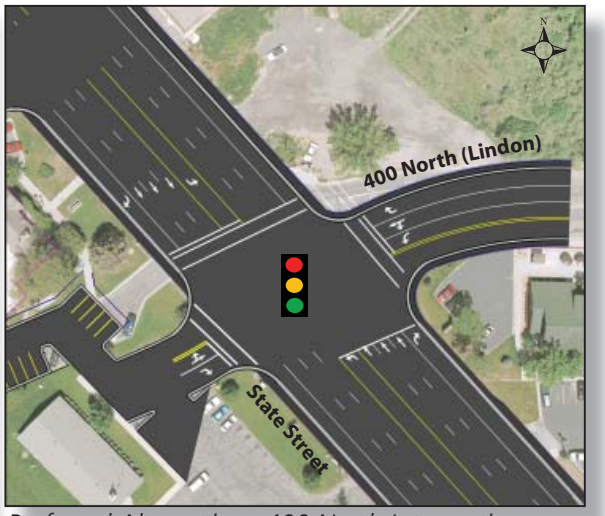
The Preferred Alternative would construct two thru-lanes, two left-turn lanes, and an exclusive right-turn lane for eastbound traffic on 2000 North (Orem)/200 South (Lindon); and one thru-lane, two left-turn lanes, and an exclusive right-turn lane for westbound traffic. It would also include three thru-lanes, one left-turn lane, and an exclusive right-turn lane for northbound traffic on State Street; and three thru-lanes, two left-turn lanes, and an exclusive right-turn lane for southbound State Street traffic at this intersection.

LINDON

The Preferred Alternative would construct thru-lanes, shoulders, sidewalks, and curb and gutter, where required, in order to provide a 117-ft wide seven-lane roadway in Lindon. Currently, State Street in Lindon varies between 5, 6, and 7 lanes and its cross-section includes inconsistent shoulder widths, sidewalks, and curb and gutter. The Preferred Alternative minimizes impacts to the existing parkstrips and sidewalks in Lindon, a concern voiced by city officials in the cooperative development of the Preferred Alternative.

400 North

Existing Conditions - 400 North Intersection



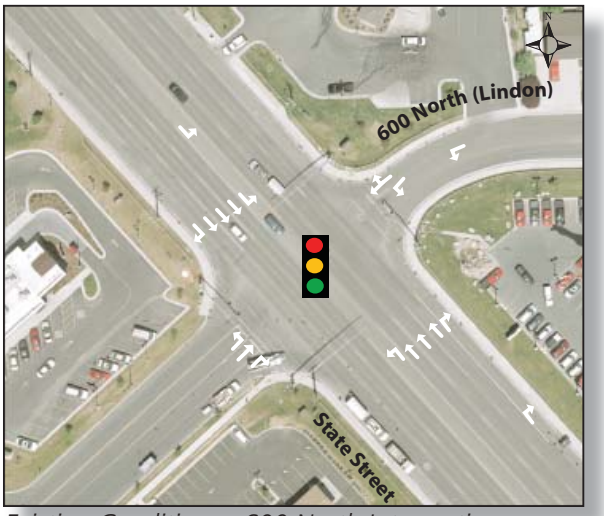
Preferred Alternative - 400 North Intersection

Presently, the intersection of 400 North and State Street in Lindon is a three-legged signalized intersection. 400 North has two left-turn lanes and an exclusive right-turn lane for westbound traffic at this intersection. Northbound State Street at this intersection has two thru-lanes, one left-turn lane, and an exclusive right-turn lane; and southbound State Street has three thru-lanes and one left-turn lane.

The Preferred Alternative would include one thru/left-turn lane and an exclusive right-turn lane for eastbound traffic at this intersection; and one thru lane, one thru/left-turn lane, and an exclusive right-turn lane for westbound traffic on 400 North. It would also construct three thru-lanes, one left-turn lane, and an exclusive right-turn lane for northbound traffic on State Street; and three thru-lanes, one left-turn lane, and an exclusive right-turn lane for southbound traffic at this intersection.

A meeting was held on October 1, 2007 between members of the State Street corridor project team and the property owners (Fellowship Bible Church and Los Hermanos) on the western quadrant of the 400 North and State Street intersection in Lindon. Specifically, the meeting was held to discuss two potential intersection improvements which would improve traffic operations and safety at this intersection. The first option included keeping the three-legged intersection and driveway locations the same and adding raised medians on State Street. The raised medians would improve traffic operations and safety, but would restrict left turns in and out of the Fellowship Bible Church and Los Hermanos properties. The second option would create a standard four-legged signalized intersection and improve traffic operations and safety by combining the Fellowship Bible Church and Los Hermanos driveways to allow access to and from both properties at the signal. Both property owners favored the standard signalized intersection with the shared driveway design because of the improved access it would provide to both properties.

600 North



Existing Conditions - 600 North Intersection

Preferred Alternative - 600 North Intersection

The intersection of 600 North and State Street in Lindon is presently a four-legged signalized intersection. 600 North has one thru-lane, one left-turn lane, and an exclusive right-turn lane for eastbound traffic at this intersection; and one left-turn lane and a shared thru/right-turn lane for westbound traffic. Northbound State Street at this intersection has three thru-lanes, one left-turn, and an exclusive right-turn lane; southbound State Street has two thru-lanes, one left-turn lane, and a shared thru/right-turn lane.

The Preferred Alternative would have the same lane configurations which currently exist at the intersection of 600 North and State Street in Lindon.

700 North (Lindon)/1000 South (Pleasant Grove)

Existing Conditions - 700 North/1000 South Intersection

Preferred Alternative - 700 North/1000 South Intersection

Currently, the intersection of 700 North (Lindon)/1000 South (Pleasant Grove) and State Street is a four- legged signalized intersection. 700 North (Lindon)/1000 South (Pleasant Grove) has one thru-lane, one left-turn lane, and an exclusive right-turn lane in each direction at this intersection.

State Street at this intersection has three thru-lanes, one left-turn, and an exclusive right-turn in each direction.

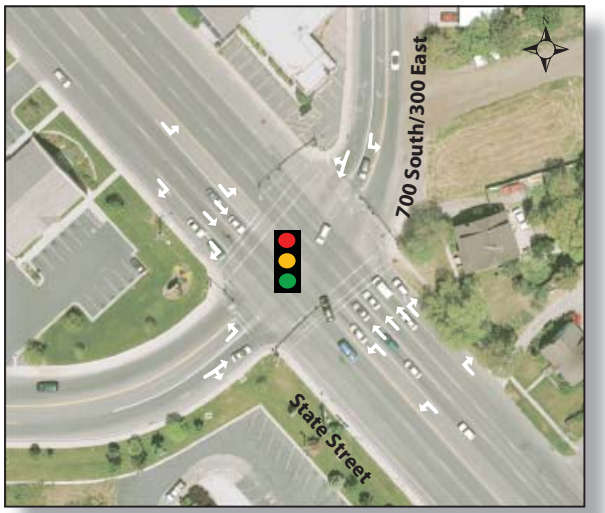
The Preferred Alternative would have the same lane configurations which presently exist at the intersection of 700 North (Lindon)/1000 South (Pleasant Grove) and State Street.

Pleasant Grove

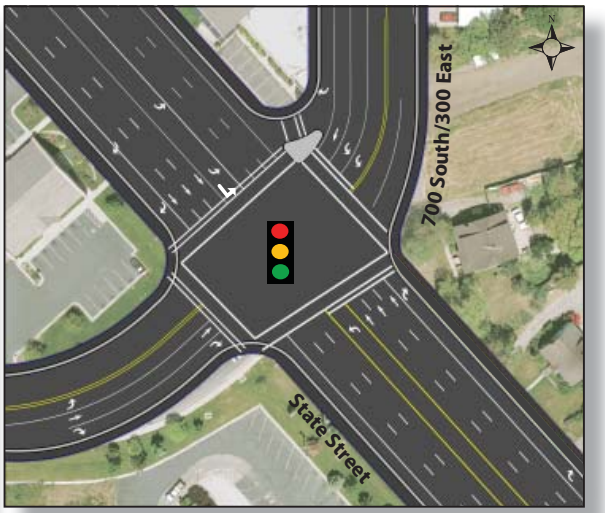
The Preferred Alternative would construct thru-lanes, shoulders, sidewalks, and curb and gutter, where required, in order to provide a 117-ft wide seven-lane roadway in Pleasant Grove. Currently, State Street in Pleasant Grove varies between 5, 6, and 7 lanes and its cross-section includes inconsistent shoulder widths, sidewalks, and curb and gutter. As discussed in Chapter 1, the State Street Railroad Bridge project is presently under construction on State Street between Geneva Road and 200 South in Pleasant Grove. The Preferred Alternative would provide a seven-lane facility which is compatible with the proposed cross-section for the State Street Railroad Bridge project. The construction of the Preferred Alternative may prompt transportation officials to restripe the five-lane State Street Railroad Bridge and roadway to a seven-lane facility. However, any activities associated with the State Street Railroad Bridge project have been assessed in the Environmental Assessment for that project.

The Union Pacific Railroad (UPRR) line parallels State Street between Pleasant Grove Boulevard and 2000 West in Pleasant Grove. Because of the constraints and costs associated with obtaining additional UPRR right-of-way and relocating railroad tracks, the Preferred Alternative would therefore widen State Street on the south side of the existing roadway in this section to avoid railroad impacts.

<u>700 South/300 East</u>



Existing Conditions - 700 South/300 East Intersection



Preferred Alternative - 700 South/300 East Intersection

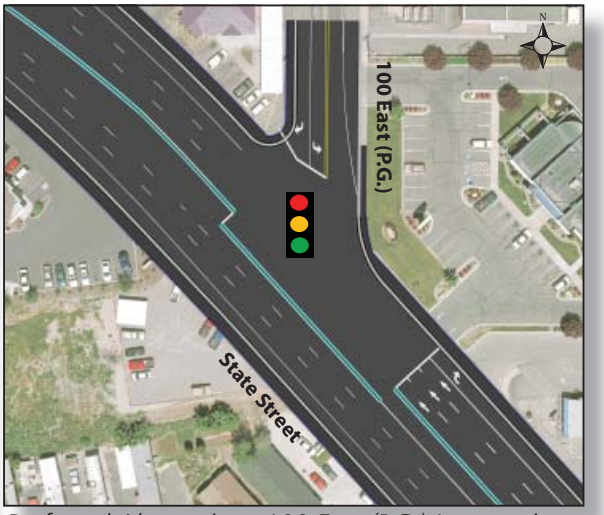
The intersection of 700 South/300 East and State Street in Pleasant Grove is currently a four-legged signalized intersection. 700 South/300 East has one left-turn lane and a shared thru/right-turn lane in each direction at this intersection. State Street at this intersection has three thru-lanes, one left-turn, and an exclusive right-turn lane for northbound traffic; and two thru-lanes, one left-turn lane, and a shared thru/right-turn lane for southbound traffic.

The Preferred Alternative would construct one thru-lane, one left-turn lane, and an exclusive right-turn lane for eastbound traffic on 700 South/300 East in Pleasant Grove; and one thru-lane, two left-turn lanes, and an exclusive right-turn lane for westbound traffic. It would also include three

thru-lanes, one left-turn lane, and an exclusive right-turn lane for northbound and southbound traffic on State Street at this intersection.

100 East

Existing Conditions - 100 East (P.G.) Intersection

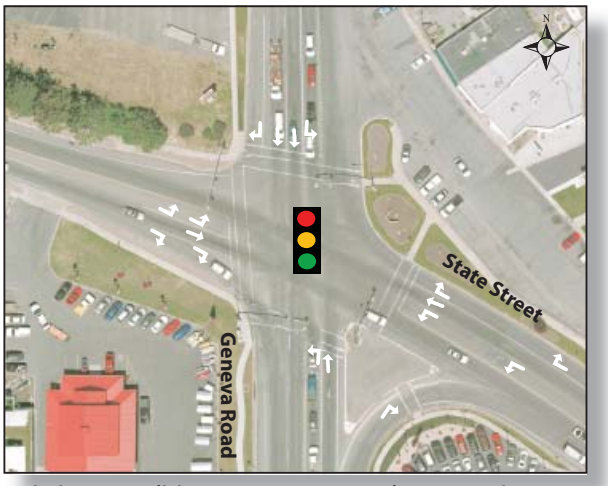


Preferred Alternative - 100 East (P.G.) Intersection

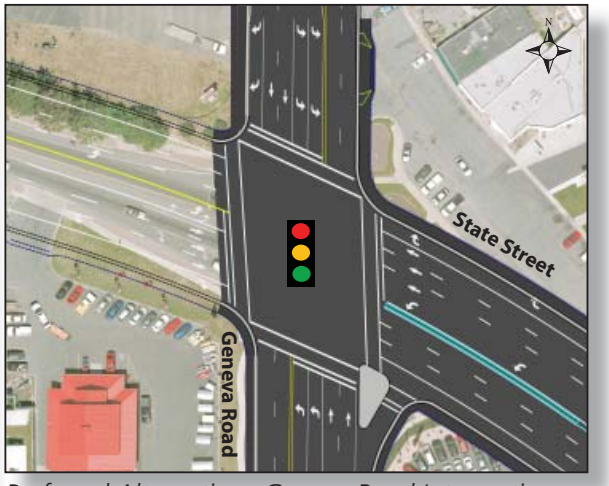
Presently, the intersection of 100 East and State Street is a three-legged unsignalized intersection. 100 East has a single shared left/right-turn lane for southbound traffic at this intersection. State Street at this intersection has two thru-lanes and a permissive median for eastbound traffic; and two thru-lanes, a permissive median, and an exclusive right-turn lane for westbound traffic.

The Preferred Alternative would add a traffic signal to the intersection of 100 East and State Street. It would include one left-turn lane and an exclusive right-turn lane for southbound traffic on 100 East at this intersection. It would construct three thru-lanes and one left-turn lane for eastbound traffic on State Street; and three thru-lanes and an exclusive right-turn lane for westbound traffic.

Geneva Road



Existing Conditions - Geneva Road Intersection



Preferred Alternative - Geneva Road Intersection

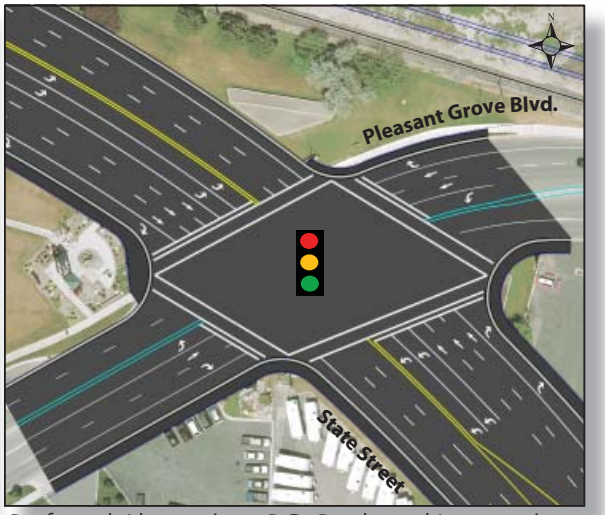
The intersection of Geneva Road and State Street in Pleasant Grove is presently a four-legged signalized intersection. Geneva Road has one thru-lane, one left-turn lane, and an exclusive right-

turn lane for northbound traffic at this intersection; and two thru-lanes, one left-turn lane, and an exclusive right-turn lane for southbound traffic. State Street at this intersection has one thru-lane, one left-turn lane, and an exclusive right-turn lane in each direction.

The Preferred Alternative would construct two thru-lanes, two left-turn lanes, and an exclusive right-turn lane for northbound and southbound traffic on 700 South/300 East in Pleasant Grove. It would also include three thru-lanes, one left-turn lane, and an exclusive right-turn lane for eastbound and westbound traffic on State Street at this intersection.

Pleasant Grove Boulevard

Existing Conditions - P.G. Boulevard Intersection



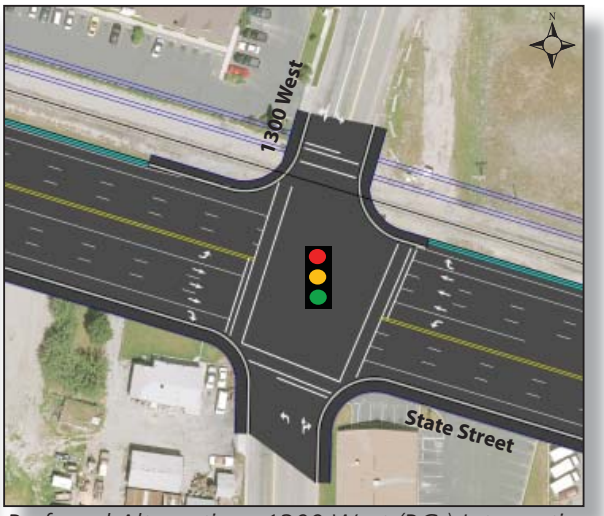
Preferred Alternative - P.G. Boulevard Intersection

Currently, the intersection of Pleasant Grove Boulevard and State Street in Pleasant Grove is a four-legged signalized intersection. Pleasant Grove Boulevard has one thru-lane, one left-turn lane, and a shared thru/right-turn lane for eastbound traffic; and two thru-lanes, one left-turn lane, and an exclusive right-turn lane for westbound traffic. State Street at this intersection has two thru-lanes, one left-turn, and an exclusive right-turn lane in both directions.

The Preferred Alternative would include two thru-lanes, one left-turn lane, and an exclusive right-turn lane for eastbound and westbound traffic on Pleasant Grove Boulevard in Pleasant Grove. It would also construct three thru-lanes, two left-turn lanes, and an exclusive right-turn lane in both directions on State Street at this intersection.

1300 West

Existing Conditions - 1300 West (P.G) Intersection

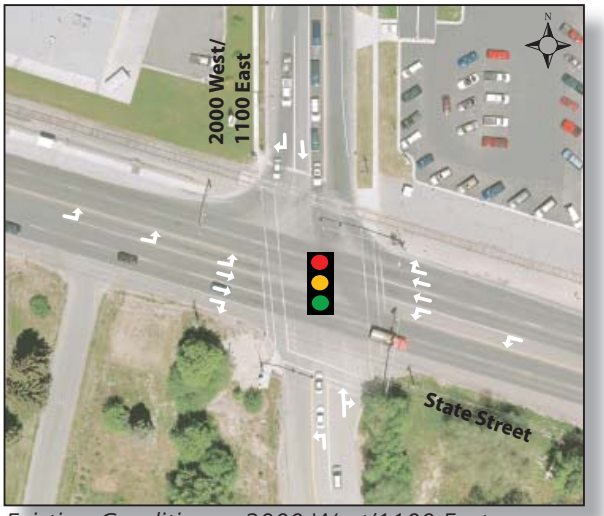


Preferred Alternative - 1300 West (P.G.) Intersection

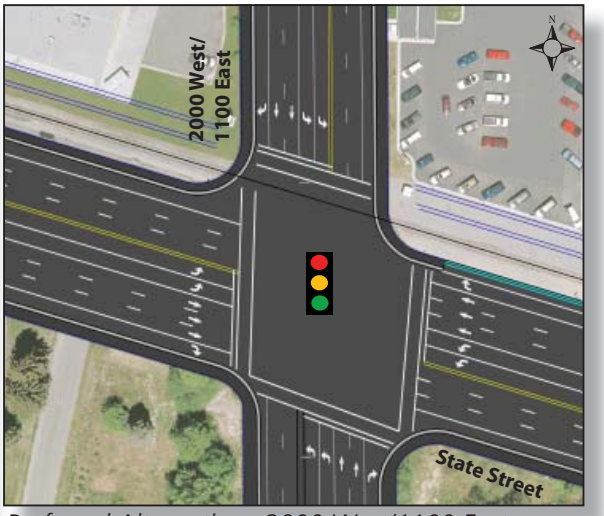
The intersection of 1300 West and State Street in Pleasant Grove is currently a four-legged signalized intersection. 1300 West has one left-turn lane and a shared thru/right-turn lane in each direction at its intersection with State Street. State Street at this intersection has one thru-lane, one left-turn lane, and a shared thru/right-turn lane in each direction.

The Preferred Alternative would have the same lane configurations which currently exist on 1300 West at its intersection with State Street in Pleasant Grove. It would also construct three thru-lanes, one left-turn lane, and an exclusive right-turn lane for eastbound and westbound traffic on State Street at this intersection.

2000 West (Pleasant Grove)/1100 East (American Fork)



Existing Conditions - 2000 West/1100 East Intersection



Preferred Alternative - 2000 West/1100 East Intersection

Presently, the intersection of 2000 West (Pleasant Grove)/1100 East (American Fork) and State Street is a four-legged signalized intersection. Northbound 2000 West (Pleasant Grove)/1100 East (American Fork) has one left-turn lane and a shared thru/right-turn lane; southbound 2000 West (Pleasant

Grove)/1100 East (American Fork) has one thru lane, one left-turn lane, and an exclusive right-turn lane. State Street at this intersection has two thru-lanes, one left-turn lane, and an exclusive right-turn lane in both directions.

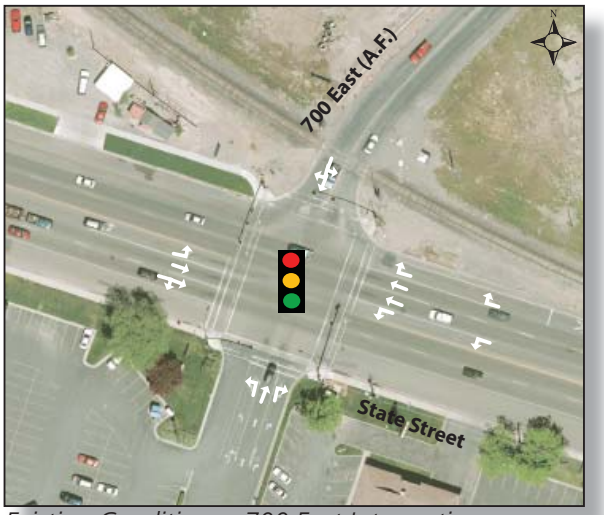
The Preferred Alternative would construct two thru-lanes, two left-turn lanes, and an exclusive right-turn lane for northbound and southbound traffic on 2000 West (Pleasant Grove)/1100 East (American Fork). It would also include three thru-lanes, two left-turn lanes, and an exclusive right-turn lane for eastbound and westbound traffic on State Street at this intersection.

American Fork

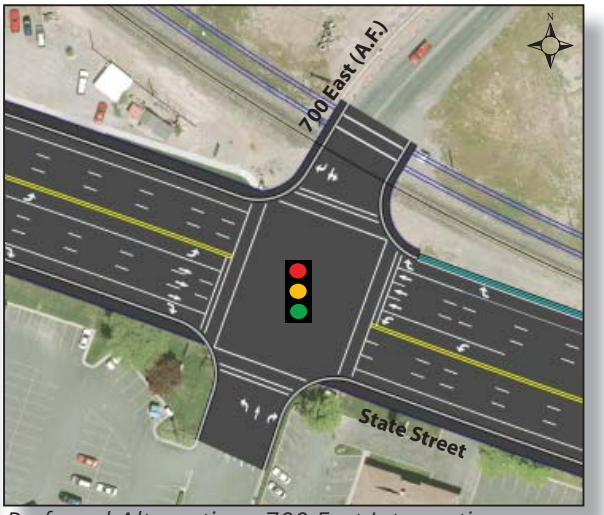
The Preferred Alternative would construct thru-lanes, a permissive median, shoulders, sidewalks, and curb and gutter, where required, in order to provide a 117-ft wide seven-lane roadway between 1100 East and 500 East in American Fork. Currently, State Street in American Fork is five lanes with a permissive median, and its cross-section includes inconsistent shoulder widths, sidewalks, and curb and gutter. The UPRR line parallels State Street between 1100 East and 700 East in American Fork. Because of the constraints and costs associated with obtaining additional UPRR right-of-way and relocating railroad tracks, the Preferred Alternative would therefore widen State Street on the south side of the existing roadway in this section to avoid railroad impacts.

At the request of American Fork City, the Preferred Alternative between 500 East and 100 East would maintain the existing five-lane roadway. However, it would make operational and safety improvements including: reconfiguring intersections, adding a signal to the intersection of 200 East and State Street, constructing raised medians, and restriping.

<u>700 East</u>



Existing Conditions - 700 East Intersection



Preferred Alternative - 700 East Intersection

The intersection of 700 East and State Street in American Fork is presently a four-legged signalized intersection. 700 East has one thru-lane, one left-turn lane, and an exclusive right-turn for northbound traffic; and a shared left-turn/thru/right-turn lane for southbound traffic at this intersection. Eastbound State Street at this intersection has one thru-lane, one left-turn lane, and a shared thru/right-turn lane; and westbound State Street has two thru-lanes, one left-turn lane, and an exclusive right-turn lane.

The Preferred Alternative would have the same lane configurations which currently exist for northbound traffic on 700 East at its intersection with State Street in American Fork; and would construct a shared thru/left-turn lane and an exclusive right-turn lane for southbound traffic on 700 East at this intersection. It would also construct three thru-lanes, one left-turn lane, and an exclusive right-turn lane for eastbound and westbound traffic on State Street at this intersection.

500 East

Existing Conditions - 500 East Intersection

Preferred Alternative - 500 East Intersection

Currently, the intersection of 500 East and State Street in American Fork is a four-legged signalized intersection. 500 East has a shared thru/left-turn lane, one left-turn lane, and an exclusive right-turn lane for northbound traffic at its intersection with State Street; and a shared thru/left-turn lane and a shared thru/right-turn lane for southbound traffic. State Street at this intersection has two thru-lanes, one left-turn lane, and an exclusive right-turn lane in each direction.

The Preferred Alternative would include two thru-lanes, two left-turn lanes, and an exclusive right-turn lane for northbound traffic on 500 East at its intersection with State Street in American Fork; and two thru-lanes, one left-turn lane, and an exclusive right-turn lane for southbound traffic. It would also construct three thru-lanes, two left-turn lanes, and an exclusive right-turn lane for eastbound traffic on State Street at this intersection; and two thru-lanes, two left-turn lanes, and an exclusive right-turn lane for westbound traffic.

200 East

Existing Conditions - 200 East Intersection

Preferred Alternative - 200 East Intersection

The intersection of 200 East and State Street in American Fork is presently a three-legged unsignalized intersection which is stop controlled. 200 East has a single shared left/right-turn lane at its intersection with State Street. State Street at this intersection has a thru-lane, a permissive median for left-turn movements, and a shared thru/right-turn lane in each direction.

The Preferred Alternative would add a traffic signal and construct a raised median in order to combine the 200 East and State Street intersection with the Main Street and State Street intersection (discussed below) in American Fork. It would close 200 East between State Street and Main Street because of the proposed combined intersection associated with the Preferred Alternative.

Main Street

Existing Conditions - Main Street Intersection

Preferred Alternative - Main Street Intersection

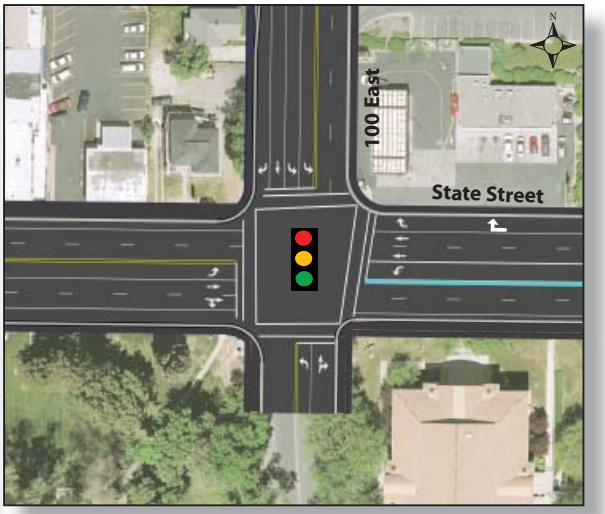
The intersection of Main Street and State Street in American Fork is currently a skewed three-legged unsignalized intersection which is stop controlled and presents numerous operational and safety issues. Main Street at this intersection has a single thru-lane for westbound and eastbound traffic.

State Street at this intersection has a two thru-lanes a permissive median for left-turn movements and in both directions.

The Preferred Alternative would add a traffic signal and construct a raised median to improve traffic operations and safety at the intersection of Main Street and State Street in American Fork. It would also construct a left-turn lane and a right-turn lane for westbound traffic on Main Street/200 East; and a single thru-lane for eastbound traffic on Main Street at this intersection. The Preferred Alternative would construct two thru-lanes and an exclusive right-turn lane for northbound traffic on State Street at this intersection; and include two thru-lanes and a merge lane for southbound traffic at this intersection.

100 East

Existing Conditions - 100 East Intersection



Preferred Alternative - 100 East Intersection

Currently, the intersection of 100 East and State Street in American Fork is a four-legged signalized intersection. 100 East has one left-turn lane and a shared thru/right-turn lane for northbound traffic at its intersection with State Street; and two left-turn lanes and a shared thru/right-turn lane for southbound traffic. State Street has one left-turn lane, a thru-lane, and a shared thru/right-turn lane for eastbound traffic at this intersection; and one left-turn lane, two thru-lanes, and an exclusive right-turn lane for westbound traffic.

The Preferred Alternative would have the same lane configurations which currently exist for northbound traffic on 100 East at its intersection with State Street; and would construct two left-turn lanes, one thru-lane, and an exclusive right-turn lane for southbound traffic. It will also have the same lane configurations which currently exist for eastbound and westbound traffic on State Street at this intersection.

2.1.5.1 Capacity

The Preferred Alternative would provide additional capacity for automobile travelers by providing a seven-lane facility on State Street between 2000 North in Orem and 500 East in American Fork. It would also increase the capacity of the State Street corridor by making intersection improvements including the construction of additional thru/turn lanes, adding traffic signals, and installing raised medians. As discussed in Chapter 1, the southern section of the project area (Orem to Pleasant Grove)

currently has an inconsistent roadway cross-section varying between five and seven lanes, while the northern section (Pleasant Grove to American Fork) has a consistent five-lane roadway cross-section. The Preferred Alternative would increase the capacity on the State Street corridor by constructing a consistent seven-lane roadway between 2000 North in Orem and 500 East in American Fork, resulting in a 2030 LOS of C or D. Between 500 East and 100 East in American Fork, the Preferred Alternative would maintain the existing five-lane roadway (at the request of American Fork) resulting in a 2030 LOS of E and F (see Table 2-1 and Figure 2-5).

Table 2-1. 2030 Roadway LOS Without and With Improvements

Segment	2030 LOS Without Roadway Improvements			2030 LOS With Preferred Alternative		
	2030 ADT	Lanes	LOS	2030 ADT	Lanes	LOS
2000 North to Center Street, Lindon	43,300	6	E	43,300	7	D
Center Street to 400 North, Lindon	43,900	5	F	43,900	7	D
400 North to 600 North, Lindon	45,600	7	D	45,600	7	D
600 North to 700 North, Lindon	45,300	7	D	45,300	7	D
700 North to 700 South, P.G.	41,100	7	D	41,100	7	D
700 South to 100 East, P.G.	38,800	6	D	38,800	7	C
100 East to Geneva Road, P.G.	31,000	5	E	31,000	7	C
200 South to Pleasant Grove Blvd., P.G.	31,300	5	E	31,300	7	C
Pleasant Grove Blvd., to 1300 West, P.G.	36,200	5	E	36,200	7	C
1300 West to 1100 East, A.F.	37,400	5	E	37,400	7	C
1100 East to 860 East, A.F.	35,500	5	E	35,500	7	C
860 East to 700 East, A.F.	35,300	5	E	35,300	7	C
700 East to 500 East, A.F.	34,400	5	E	34,400	7	C
500 East to 200 East, A.F.	38,900	5	E	38,900	5	E
200 East to 100 East, A.F.	41,700	5	F	41,700	5	F

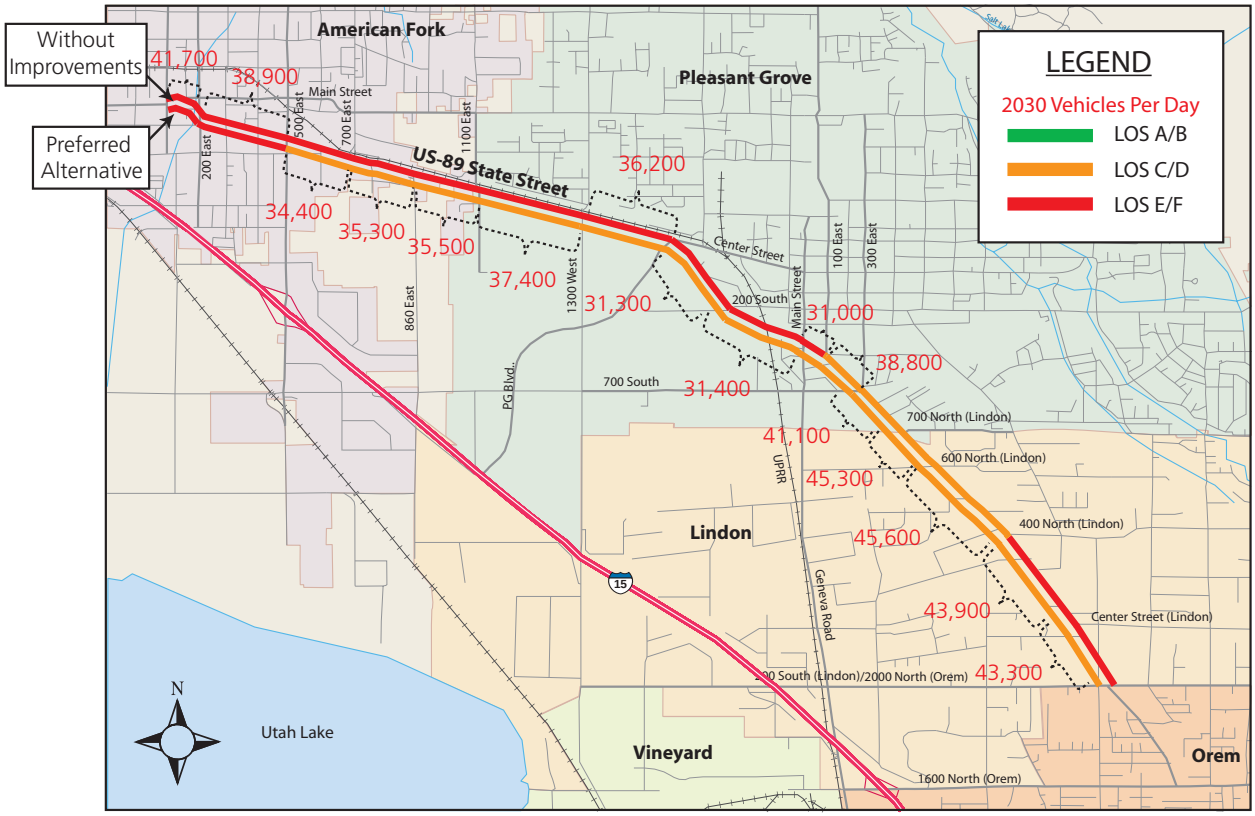


Figure 2-5. 2030 Roadway LOS Without and With Improvements

The intersections along the State Street corridor are currently operating at LOS A through F, during peak PM level traffic (see Chapter 1-Purpose and Need, Section 1.4.2). However, without improvements, 13 of the 17 intersections along the State Street corridor will be operating under failing conditions (LOS E or F) during peak PM level traffic. The intersection improvements associated with the Preferred Alternative will satisfy existing and future traffic demand on the State Street corridor, resulting in LOS A through LOS D during peak PM peak level traffic for all intersections except 100 East in American Fork (see Table 2-2, Figure 2-6 and Figure 2-7).

Table 2-2. 2030 Intersection PM Peak LOS

Intersection	2030 LOS Without Intersection Improvements			2030 LOS With Intersection Improvements		
	Control Device	Average Delay in Seconds	LOS	Control Device	Average Delay in Seconds	LOS
2000 North, Orem	Signalized	80	E	Signalized	43	D
Center Street, Lindon	Non-signalized	>50	F	Signalized	15	B
400 North, Lindon	Signalized	33	C	Signalized	32	C
600 North, Lindon	Signalized	31	C	Signalized	21	C
700 North, Lindon	Signalized	35	C	Signalized	29	C
700 South, P.G.	Signalized	>80	F	Signalized	37	D
100 East, P.G.	Non-signalized	>50	F	Signalized	23	C
Geneva Road, P.G.	Signalized	>80	F	Signalized	35	D

Intersection	2030 LOS Without Intersection Improvements			2030 LOS With Intersection Improvements		
	Control Device	Average Delay in Seconds	LOS	Control Device	Average Delay in Seconds	LOS
Pleasant Grove Blvd., P.G.	Signalized	>80	F	Signalized	41	D
1300 West, P.G.	Signalized	>80	F	Signalized	33	C
1100 East, A.F.	Signalized	>80	F	Signalized	45	D
860 East, A.F.	Non-signalized	>50	F	Signalized	9	A
700 East, A.F.	Signalized	49	D	Signalized	25	C
500 East, A.F.	Signalized	>80	F	Signalized	41	D
200 East, A.F.	Non-signalized	>50	F	-	-	-
Main Street, A.F.	Non-signalized	>50	F	Signalized	30	C
100 East, A.F.	Signalized	>80	F	Signalized	<80	F

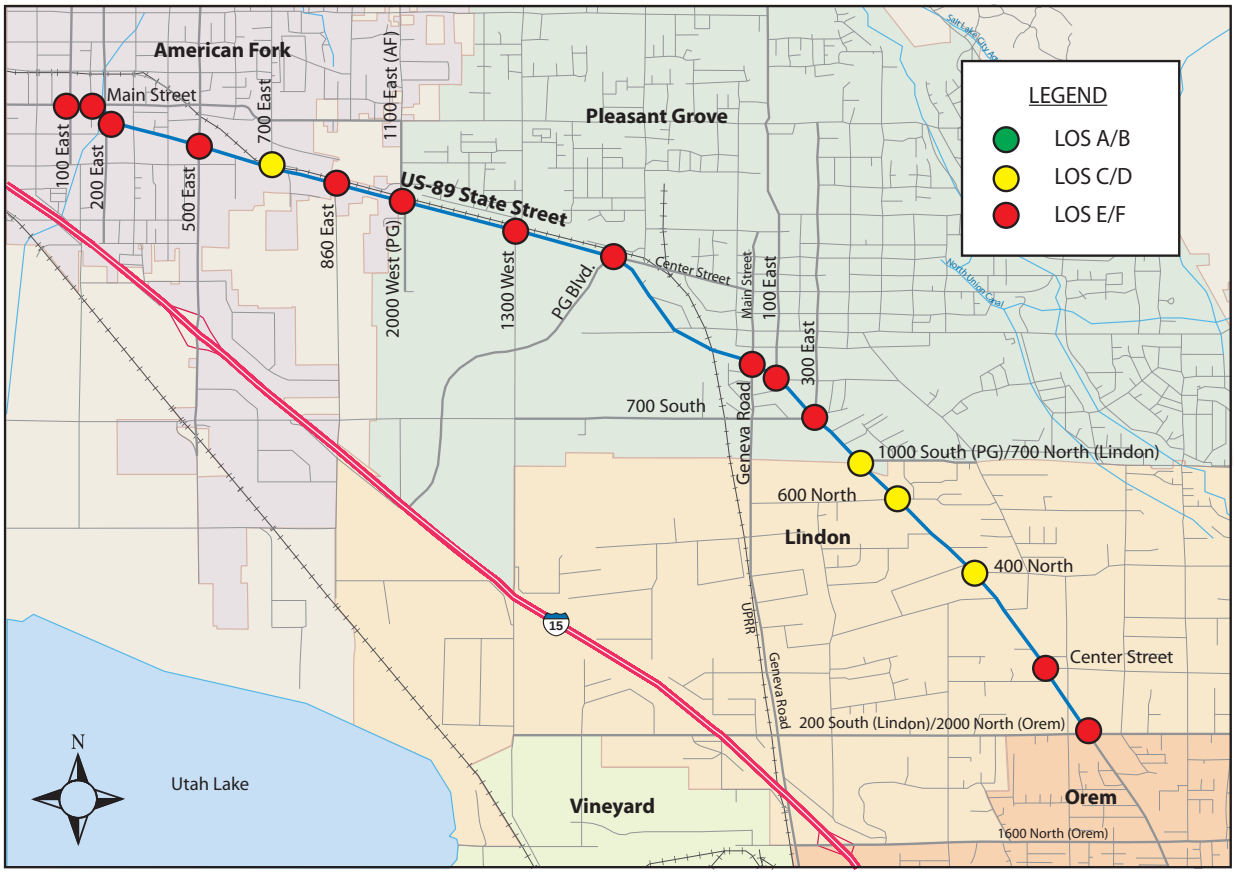


Figure 2-6. 2030 LOS without Intersection Improvements

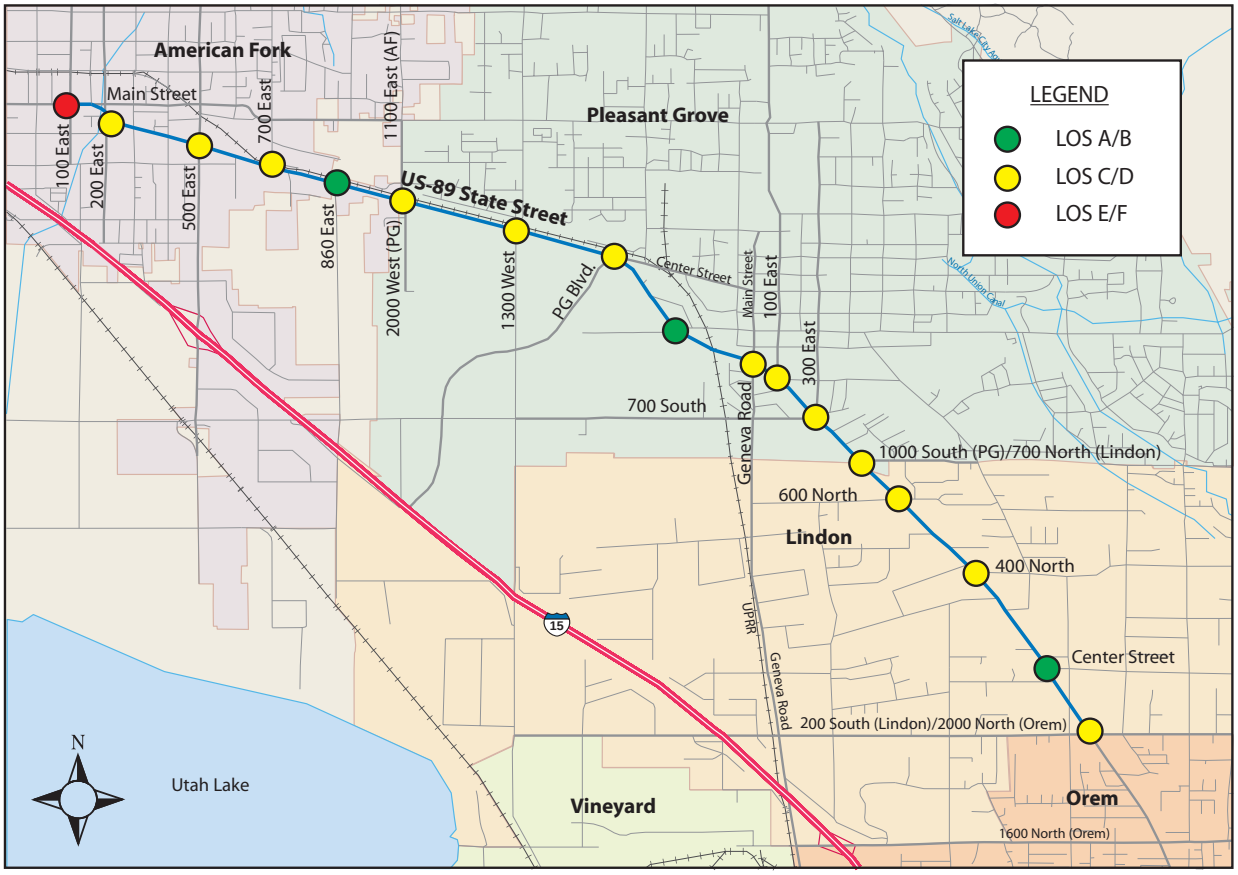


Figure 2-7. 2030 LOS with Intersection Improvements

2.1.5.2 Safety

The Preferred Alternative would improve the safety of automobile, bicycle, and pedestrian traffic on the State Street corridor by implementing guidelines developed by American Association of State Highway and Transportation Officials (AASHTO). Specifically, the Preferred Alternative would provide a typical cross-section which is consistent with AASHTO guidelines for thru-lane widths, shoulder widths, and median widths. Furthermore, the Preferred Alternative would decrease the congestion on the State Street corridor, a major contributor to the high number of traffic accidents.

2.1.5.3 State, Regional, and Local Plans

The Preferred Alternative is consistent with state, regional, and local plans. It is included in the Utah Department of Transportation (UDOT) Statewide Transportation Improvement Program and the Mountainland Association of Governments (MAG) Regional Transportation Plan (RTP). Furthermore, the Preferred Alternative is consistent with the local transportation plans for Orem, Lindon, Pleasant Grove, and American Fork.

2.1.5.4 Impacts

The Preferred Alternative was selected due to its reduced impacts on the environment when compared to other practicable alternatives. Its 117-ft cross-section and alignment were developed in order to avoid and minimize impacts to the natural and human environment, with special consideration for reducing impacts to businesses on the State Street corridor.

Table 2-3. Alternatives Considered

Purpose and Need	Alternatives				
	Preferred Alternative (117-ft Roadway)	No-Action	TSM/TDM	Transit	132-ft Roadway
Traffic Demand	• Constructs a seven-lane roadway on a majority of the State Street corridor which increases capacity • Constructs intersections which improve traffic operations • Provides a LOS D or better in 2030 for a majority of the State Street corridor • Constructs raised medians between 500 East and 100 East in American Fork to improve traffic operations	• Increases traffic congestion • Provides LOS E/F for majority of State Street	• No substantial improvements on capacity or traffic congestion	• No substantial improvements on capacity or traffic congestion	• Constructs a seven-lane roadway on a majority of the State Street corridor which increases capacity • Constructs intersections which improve traffic operations • Provides a LOS D or better in 2030 for a majority of the State Street corridor
Safety	• Constructs a typical cross-section consistent with AASHTO guidelines for lane widths, shoulders widths, and permissive medians. • Constructs a seven-lane roadway which relieves congestion and reduces accidents • Constructs intersections which improve safety • Constructs raised medians between 500 East and 100 East in American Fork to improve safety	• Increases traffic congestion contributing to higher accident rates • No changes to existing typical cross-section	• No changes to existing typical cross-section • No substantial improvements on safety	• No changes to existing typical cross-section • No substantial improvements on safety	• Constructs a typical cross-section consistent with AASHTO guidelines for lane widths, shoulders widths, and permissive medians. • Constructs a seven-lane roadway which relieves congestion and reduces accidents • Constructs intersections which improve safety

Purpose and Need	Alternatives				
	Preferred Alternative (117-ft Roadway)	No-Action	TSM/TDM	Transit	132-ft Roadway
State, Regional, and Local Plans	• Constructs a roadway consistent with planning efforts	• Not consistent with planning efforts	• Not consistent with planning efforts	• Not consistent with planning efforts	• Constructs a roadway consistent with planning efforts

Based on its ability to meet the State Street corridor project's purpose and need while minimizing impacts to the environment, the Preferred Alternative is therefore carried forward in this ES for an assessment of its direct, indirect, and cumulative impacts. The Preferred Alternative is the least impacting alternative which would provide improvements to State Street traffic operations and safety, and would build a roadway consistent with state, regional, and local plans (see Table 2-3). In addition, the No-Action Alternative is also carried forward in this ES, as it provides baseline conditions for analysis with the Preferred Alternative.